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ABSTRACT

A longitudinal study investigated the development of children's writing over a 5-year period by examining how children use physical and symbolic representation systems that they have constructed to express meaning, how the meaning they intend is related to the social context and function of written language, and how this constructive process of literacy development is related to more general cognitive development. The study also demonstrates how the principles and methods of developmental psychology, including the method of critical exploration, can be used to research and understand how children's concepts of writing change. Participants in the study were four children from an entering kindergarten class (the study was completed in their fifth year of school) in a small, urban non-sectarian private school. Weekly classroom observations and interviews were made, and all journal writing over the entire 5 years plus most of the folder writing for the last 2 or 3 years was collected. Results outlined the detailed year-by-year development of the four children to show how they each confronted certain fundamental semantic issues in the differentiation of literary genres and the manifestation of part/whole coordination within the writing domain. Findings indicate that learning to make meaning in writing is a developmental issue that children begin to construct as soon as they begin to write. Results suggested that individual differences could be understood within the whole continuum of writing development, allowing for more effective instruction for individual children. (One table and 11 figures are included; 24 references are attached.) (PRA)

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Meaning Making: Longitudinal Aspects of Learning to Write

by

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The purpose of this symposium has been to share with you ways in which developmental and cognitive psychology have helped us to understand how children come to learn and know basic school subjects such as reading, writing, science and mathematics. My research has been focused on how children become writers and has been formed and guided by principles of developmental psychology, particularly the work of Jean Piaget. There are several ways in which his theory has shaped my own research into the development of writing; in this talk I will share three of them with you, to give you a sense of how developmental psychology can inform educational research.

One basic premise of Piaget's theory is that knowledge is constructed by the individual as a result of interactions between the individual and the environment. Now for those of us who call ourselves constructivists this premise may seem so obvious that it need not be mentioned. However, if one assumes that all knowledge is constructed in this way, then the ramifications for instruction are legion, and require careful consideration. Most school instruction is not based on such an assumption, but rather assumes that knowledge can be transmitted by telling.

Learning to write is a developmental process resulting from the interaction between the child's knowledge and the literary environment to which the child is exposed. This construction process begins long before children enter school, with their first exposure to books, signs, ads, labels and the trappings of an urban literary environment (Ferreiro, 1978; Harste, Woodward & Burke, 1984; Heath, 1983). Thus children enter school with a great deal of knowledge about literacy, yet, in most teaching situations, this knowledge is ignored or discounted. Teachers make assumptions about

children's lack of knowledge, because it is clear that most children do not come to school with conventional knowledge about reading and writing.

How to find out what knowledge children do have is a contribution that Piaget has made to this field. While his research did not cover literacy development, his method of examining children's knowledge and understanding, the method of critical exploration, has been invaluable in investigating this development. Researchers have observed, collected, and analyzed young children's early writing attempts in an effort to document and understand the process of learning to write. The developmental aspects of this process are represented in the research of, among others, Ferreiro (Ferreiro, 1978, 1984, 1986; Ferreiro and Teberosky, 1982), Sulzby (Sulzby, 1987; Teale and Sulzby, 1987; Sulzby, Barnhart, and Hieshima, 1989), and Dyson (1985,1989a, b, c). Ferreiro, in particular, has taken the Piagetian model of research and conducted an extensive study of the development of children's understanding of the alphabetic principle (that the sounds of speech, rather than the meaning of speech are represented in writing) using the method of critical exploration.

Most of what I am going to talk about today will focus on how this method of critical exploration can be used in a longitudinal study to trace the development of certain aspects of learning to write over a five year period. But before I show you what I mean, let me mention the other two ways developmental psychology has influenced research and understanding of writing development.

I have said that teachers traditionally assume that children have no knowledge when they lack conventional knowledge of literacy issues. (It is important to note that this idea is changing, and the whole language movement in education is helping to promote a more constructivist and

developmental viewpoint in the teaching of reading and writing. However, this movement is by no means the norm in literacy instruction.) The result of this assumption is that teachers teach reading and writing in a piecemeal fashion, separating out the mechanical and technical aspects of literacy from the meaningful, social aspects, putting the whole together two or three years after instruction has begun. The consequences are most serious in the teaching of writing where early instruction is often seen as primarily training in handwriting and spelling. In contrast, if one takes the developmental point of view that children think and understand things not quantitatively less than adults, but qualitatively differently than adults, then instruction must be more holistic, constantly addressing the whole as well as the pieces. Ferreiro (Ferreiro, 1984) makes a crucial point when she points out that children are trying to understand not just the parts of the system, but that they are constantly trying to reconstruct the system. "They try to understand not only the elements or the results but also, and above all, the very nature of the system." (1984, p. 172).

If we believe that indeed children are constantly trying to understand the nature of the system of literacy, than it behooves us to understand the nature of their understanding of this system as they reconstruct it for themselves. The method of critical exploration can be used for just this purpose. The research discussed here will show you haw that can be done.

The final contribution of developmental theory to understanding writing development that I will discuss is the relationship between the development of logical thinking and writing development. Basic logical functions that have been studied in detail by Piaget such as part/whole coordination (e.g. Inhelder & Piaget, 1964), one to one correspondence (e.g. Piaget, 1965), seriation (both temporal and spatial) (e.g. Inhelder & Piaget,

1964; Piaget & Inhelder, 1967), and classification (e.g. Inhelder & Piaget, 1964) contribute to the development of knowledge within specific domains of knowledge, including the development of literacy. One area of interest in this study is how such logical functions are related to and used in the development of writing.

These three points, the use of the method of critical exploration for research in a specific domain of knowledge, the assumption that children's knowledge is qualitatively rather than quantitatively different than adults', and the relationship between logical thinking development and development in a specific domain of knowledge, indicate how influential developmental psychology can be in understanding development in basic school subjects. My purpose in this paper is first to demonstrate how the method of critical exploration can be used to research and understand how children's concepts of writing change, and second to show you how logical thinking is connected to this development.

In my research I have identified four strands of development in writing: physical, symbolic, semantic and social (Black & Kroll, 1989; Black, Ammon and Kroll, 1987) (see Figure 1). The physical strand refers to how the child physically represents text on the page and includes consideration of such issues as letter orientation, organization of space, small motor coordination, use of capitals and lower case letters, etc. The symbolic strand refers to how the child uses the symbolic aspects of written language, particularly the development of the idea that writing represents the sound rather than the meaning of language. Issues involving the use of invented spelling and invented punctuation are included in this strand. The semantic strand refers to how children understand and construct the meaning of text in writing. Included in this strand is the child's understanding of the relationship

between what is written down and what the writer means, the kinds of physical and symbolic structures the child constructs to make his/her meaning clear, how the writer makes use of literary models and genres, and the different functions of writing and written text that the young writer invents. The social strand refers to how the young writer constructs the communicative aspects of written language; i.e. how the young writer develops a notion of an audience, and the context in which writing itself occurs.

In this paper I will present the semantic strand, how children use physical and symbolic representation systems that they have constructed to express meaning, how the meaning they intend is related to the social context and function of written language and how this constructive process of literacy development is related to more general cognitive development. I will use an examination of this particular strand of writing development to exemplify how we can apply the method of critical exploration to understanding children's writing development and to show the qualitative changes in understanding as children construct their own understandings of how to make meaning in writing.

Methods

Subjects

I conducted a longitudinal study of the development of children's writing for five years. I began my study with an entering kindergarten class of 17 children, 8 girls and 9 boys, in a small, urban non-sectarian private school. The school population is largely white, middle-class, although about 25% is non-white. When the children began school, they were between the ages of 4 1/2 and 5 1/2. I completed the study in their fifth year of school when they

were either in the third or fourth grade. With the exception of one child, they all remained at the same school, although they were in different classrooms after the first year.

Procedures

During the first four years I spent an hour a week in their classrooms, during a writing period, observing, assisting and interviewing them about their writing. In the fourth year I also did some teaching of writing in one classroom. The writing for the first three years was primarily in journals, bound notebooks where different writing genres were acceptable. In one class in the third year children also began to keep writing folders. In the fourth and fifth years both journals and folders were used for writing. Writing done in the folders tended to be offered for revision more often; however, the distinction between the two physical places for writing was unclear until the final year. In the final year, the journal was clearly for personal writing; there were no topic assignments. Writing in the folders tended to have some sort of constraint placed on them in the way of topic, genre, or style. I collected all the journal writing over the entire five years, and most of the folder writing for the last two or three years.

During the five years the children had a total of six different teachers, although not all children had all teachers. Each teacher had an individual writing program, which ran the spectrum from a whole language approach to the teaching of writing to a much more directive approach, with assigned topics and genres. However, all of the teachers encouraged invented spelling in the first three years, provided frequent opportunities for writing (two to three times a week), and often allowed topic choice. In most of the classrooms, the sharing of writing was a regular occurrence, although the use

of writing conferences was limited, as was discussion of writing processes, styles and problems. The teachers at the school see themselves as learning to be good writing teachers. They are committed to trying to implement writer's workshops in their classrooms on a regular basis, but are still at different levels of implementing this approach. They were largely uninvolved in the data collection process, although very cooperative and supportive.

Results and Discussion

Preliminary results indicate that there are identifiable levels of development within each of the four strands described: physical, symbolic, semantic and social. Categories or classification of general characteristics and level within each strand are being developed, but are not reviewed in this paper. Here I will focus on development within the semantic strand, keeping in mind evidence of concurrent development within the other three strands, both from my own work and from the work of other researchers (Physical and symbolic: Ferreiro, 1978, 1984, 1986; Ferreiro and Teberosky, 1982; Sulzby, 1987; Teale and Sulzby, 1987; Sulzby, Barnhart and Hieshima, 1989. Semantic: Kroll,1990. Social: Dyson, 1985, 1989a, b, c; Harste, Woodward and Burke; 1984). I will use this development to exemplify how examining children's writing in detail can be used to interpret their understanding of writing as it develops. I will review in detail the development of four children, Cathy, Matthew, Scott and Sally, to show how they have confronted certain fundamental semantic issues as they construct and reconstruct making meaning in writing.

Issues within the Semantic Strand

The major issues I have observed that undergo a developmental construction and reconstruction process within the semantic strand are:

(1) the relationship between drawing and writing;
(2) differentiation of literary genres such as narrative, exposition and poetry;
(3) coherence within the text;
(4) the influence of heard and read literature on structure, style and content;
(5) the manifestation of part/whole coordination within the writing domain.

I have examined development year by year for each of the semantic issues for the four children, but for our purposes here I will focus on (2) the differentiation of literary genres, and (5) the manifestation of part/whole coordination within the writing domain.

The Development and Differentiation of Literary Genres

The development and differentiation of literary genres is at the core of the semantic strand of development in writing. By constructing and reconstructing their own ideas of the different possible structures written language can take, children come to understand the wide variety of ways that one can make meaning. Britton's view of this process (1970) gives a general overview: writing begins as an expressive form of communication and is gradually differentiated into two general categories, poetic and transactional. Poetic writing is fiction, narrative prose and poetry; written language that integrates poetic style with meaning, focusing more on the personal aspects of writing. Transactional writing is informational writing, focusing more on the communication purpose of writing. This view is a useful beginning for examining this strand, but not very helpful in understanding the details of the change in children's writing. More specific categories of literary behavior and attributes is necessary. In examining the development and differentiation of genres I look at genre category (e.g. narrative, exposition, poetry etc.), topic, structure (the relation of the organization of the text to conventions of text

organization in each genre), genre markers (e.g. once upon a time), and voice (personal style).

Year 1. Even in the first year, the roots of different writing genres were apparent. The writing was a personal statement of opinion or fact, a description of the picture, or an elaboration on the action in the pictures; e.g. Cathy's piece "THSZNTNATTHHLZ" (This is night time at the hills), which is accompanied by a drawing of hills and a triangular moon. (See Figure 2). Other pieces involved either wishes or expressions of feelings; I wish...., I like...., I hate...etc. These pieces are good examples of early expressive writing which contain the seeds of both narrative and expository text.

Frequently, children wrote on one topic several times. When this occurred, it was easier to identify genre precursors. Thus, Matthew wrote a number of pieces (all no longer than one sentence) first on "the rabbit" and later on "G.I. Joe" (see Figure 3). The G.I. Joe pieces are story precursors; each one represents a battle between G.I. Joe and his arch enemy Cobra, with G.I. Joe triumphing in the end. Although these pieces lack most narrative characteristics (no plot, no character development, no setting etc.) they do have the rudiments of narrative structure. There is a hero, G.I.Joe, triumphing repeatedly over the enemy, Cobra. The rabbit pieces, on the other hand, show a mixture of narrative and expository style. The reader could interpret the series of pieces (which occurred over a period of four months) as an ongoing story about a rabbit and all his activities or as a series on "what I know about rabbits." In fact, the series seems to be something of both. Some entries have a more narrative flavor (e.g. "HE*STOPPT*4 LNCH"). The text is about an action, it is written in the past tense, it is about a moment in time. Others seem more expository (e.g. "THE RABET iS PREDE"). Part of the series described the rabbit, which could be considered as

character description, since Matthew used the definite article to identify the rabbit. However, the collection of entries that are more descriptive in nature seem like a general description of a rabbit, rather than the description of a story character. (See Figure 4).

Year 2. At the beginning of the second year, personal narrative was the most common form of writing. Scott's soccer team piece (Figure 5) was typical. The entries were short and summarized personal information. During the year these personal narrative pieces became longer and more elaborated. Many initially had the characteristics of diary entries, but eventually developed into full-fledged narratives. Scott's garter snake piece and Matthew's pieces on his trip to Alaska and to Los Angeles demonstrate this development. (See Figures 6, 7, and 8). These later pieces have many characteristics of narrative structure: sequence, a beginning, middle and end, voice, and past tense. Although they include these elements of narratives, they tend to lack all development (as in the garter snake story) (see Figure 6), or to trail off at the end, (as in Matthew's Los Angeles story) (see Figure 8). Graves (1983) and Calkins (1986) call these the *bed to bed* stories, because often the stories only end when the characters go to bed. As soon as these children started to write longer pieces, the *bed to bed* structure appeared.

Not all the narratives were derived solely from personal experiences. The children began to attempt to write fiction, imitating stories and structures they had heard in literature. Sally's *Mouse House* story is a fantasy that takes off from a possible personal experience.

> Own day I was eating lunch wen I herd sum litll noysis they were coming from the cuderd. sloly and coshly I opind it.

There wer littele mies in the coder. They wer steeling all the food. Soe I pot then into my red moueshoues.

They wer very bisy little creechers. One of them was even playing ball.

One day I tock them out for a wolk. It was suny. So we tock a loung wolk and wen we came home we wer all tiered and we all went to bed after diner

One day I wocke up and my mise wer gon. There wer plae mise in the mousehouse.

(One day I was eating lunch when I heard some little noises. They were coming from the cupboard. Slowly and cautiously I opened it. There were little mice in the cupboard. They were stealing all the food. So I put them into my red mousehouse. They were very busy little creatures. One of them was even playing ball. One day I took them out for a walk. It was sunny. So we took a long walk and when we came home we were all tired and we all went to bed after dinner. One day I woke up and my mice were gone. There were play mice in the mousehouse.)

In this piece we see the true beginning of a narrative. The story begins with a typical genre marker: one day. It consists of a sequence of events with a beginning, middle and end that show some rudimentary development. Sally began mysteriously, established the mice and herself as characters in the story and then ended it by having them disappear just as mysteriously. She used a sequence of events within the sequence where she described the long walk. In this section she had difficulty ending it, so she ended by putting everyone to bed. Her story is written in the past tense, another genre marker.

Towards the end of the second year the children began writing never-ending stories. From the end of March until the end of the school year Scott periodically added to a story about a boy who meets a dinosaur, and the adventures they have together. This development seems an offshoot of the *bed to bed* sequence, but differs because the adventures go on and on never

ending. These stories were more common in the third year where I will discuss them further.

Not all personal experience pieces developed into narratives. Protoexpository pieces appeared in several guises. Matthew and Scott, as well as many of the other boys, drew and described numerous mazes, explaining the goals and the point systems in some detail. As their teacher responded to their writing in their journals, the children began to carry on written conversations with her about what they were writing. Sally, and a number of the other girls, wrote interview pieces about each other. These pieces are clearly derived from personal pieces in that they describe the person's likes and dislikes, but they are written in the third person about someone else. (See Figure 9). Matthew wrote a piece about the solar system, which he also illustrated. This variety of expository writing styles shows that the children were beginning to understand and construct different structures for communicating different kinds of meaning in their writing.

Year 3. In the third year the children's writing consisted mostly of personal narrative and experimenting with narrative fiction. The children had differentiated narrative from other genres, although there are still samples that show some mixing of genres. Stories consistently began and ended with traditional story markers such as *once upon a time, one day, once there was* and *happily ever after, the end,* and so forth. Matthew, Scott and Sally all wrote ongoing stories that lasted over several entries. The structure of these stories is quite predictable. The story begins with the introduction of a main character and with the introduction of that character's problem. This beginning is followed by a number of incidents that, while coherent within themselves, are connected only minimally. I call these *James Bond* stories, since the structure reminds me of the typical *James Bond* thriller where one

exciting event follows another, with almost no connection between each event. The ends of these stories, if in fact they are completed, are contracted to a few sentences where the final problem is resolved without any elaboration and the people all end up happily; e.g. "And so he folled the map and he killed the dragen and reskyoued the princass and got back home. and lived happly ever after." (Sally, *King Clumsy IV).* (See Figure 10). The children experimented with different kinds of narratives: fairy tales, sports stories, scary stories, fictional stories of themselves and their friends. In spite of the variety of subjects, the stories maintained the same *James Bond* or *bed to bed* structure.

Although narrative was the dominant genre form used during this year, children did experiment with different expository forms as well. Scott wrote commercials and recipes which he interspersed into his ongoing story. Sally wrote more friend interview stories, similar to the ones she had written the year before. Cathy was working to make sense of new ideas with a piece "I wish I was historee and my muthr was historee." (See Figure 11). The children used their journals as diaries, recording reflections about their experiences and their feelings. Sally marked some entries "privit, do not reed!!!" In addition, she experimented with poetry, writing several poems during the year.

The third year is dominated by a construction and reconstruction of several different genres. Narratives, while dominated by two basic structures (*James Bond* and *bed to bed*), were constructed with a variety of content. In expository writing, the children investigated a variety of forms. In personal writing, the children began to use writing as a means for clarifying their own feelings about themselves and their experiences. Writing is beginning to take on the epistemic function described by Bereiter (1979) in which the writer

writes to learn. In this case, the children are writing to learn more about their own feelings and ideas. Making meaning with writing is starting to become a reciprocal process; the writer makes meaning for both himself and for the audience.

Year 4. In the fourth year we begin to see well-formed narratives. Some of the children used a more anticipatory story structure, setting up events for the reader and then following up on those events. While sequential, linear constructs, rather than true anticipatory constructs, continued to be used within these stories, the overall impression is of a well-formed story. Scott and Sally wrote Fish Stories in chapters with character descriptions, settings, problems, resolutions and conclusions. Here is one excerpt which illustrates this advance in story planning and structure:

Chapter 1
How it began

> "Hi my name is Skippy. I'm a skipjack tuna. And I have a story to tell you." One day I was swimming along. I was going to the super sewead store and I was carrying my purse. When a shark came up to me and took my purse and swam off!!! I shoted at him but he didn't her me. I had 100 clam shells in my purse. 1 clam shell is werth 1 doller so I was prity mad. To top that off my purse had some very prety perals on it from the most valubal oysters in the sea. I was angry as a wave crashing on the rocks.....

The story goes on for two chapters in which Skippy calls the police (swordfish who sharpen their swords on the coral) and describes the thief. They go off to catch him. It ends:

> ...Finly we saw him he was bieing a tikit to the nexst train out of toun. Gest as he was about to by his tikit Sam *[the police chief]* snuk up behind him and grabed him he clampd handcufs on him and took

him to jail. jail is a big room made out of coral.
Well thats the end of my story. I have to go by."
THE END

Sally began the story by speaking directly to the audience. She set the stage, provided the audience with necessary world knowledge (about the value of the stolen objects), and used imagery to express her feelings. All of these are new literary devices, commonly used by adult fiction writers and poets, with which she experimented in order to understand how to use them to make her meaning clear. The ending is not the compacted ending of the year before. She was able to describe the action and the setting at the end of the story, as well as end where she began, with a message to the audience.

Scott's fish story was not nearly so well planned and executed; it still contains *James Bond* elements. However, the beginning of the story was well developed, setting the scene and the characters:

> One day there was a school of fish. The techer of the school was named Mr. Hammerfish. The biggist fish is named Fred. He can swim the fastest. The secont biggeist was named Jon. Jon went the secont fastest. The third was named Tom. Tom went the third fastestest. The fourth bigist was named Han. He could swim the fourth fastest. now the smallest could not swim fast at all (he could not even swim an inch in a minit) His name was Ty.

Of course, Ty is the hero of the story. He gets lost from the school and has a *James Bond* series of adventures. He does not end up back with the school, which is what our own sense of good story structure would lead us to expect. In fact, the story ends in an unsatisfying way structurally; Scott tried a new tactic, ending with a joke. Ty gets into a battle with a sea serpent, and Ty is winning:

...Ty said "down for the cont 1 2 3 that sure was a knock out.

The serpent said "that was not a knock out. I could bely even feal it.

"Than why dident I hear yoaer hart betting?" said Ty.

"Because you just got an ear efekshin!" yeald the serpent.

The punch line of the joke sufficed to end the story for Scott.

Matthew and Cathy also showed progress in writing more well-formed narratives that included some anticipation, while maintaining the vestiges of the *James Bond* style. All four children used chapter headings to indicate the different parts of their stories. Most of the stories had real problems that were maintained to a final resolution, if the child finished the story. Finishing a story was an issue, and many stories were begun, set-up well but remained unresolved. The lack of an ending indicates that at this point in their development as story writers ending a story was the most difficult part of story structure to construct, although when stories did end, the ending was more elaborated, as we saw with Sally's *Fish Story*.

The children experimented with more types of narrative, mixing personal experience with narrative structure. Matthew wrote a baseball story which was on-going, written in the present tense, as if it was the commentary accompanying an actual game. He included interruptions of songs to indicate similar interruptions that occur in real baseball games, and told the reader: "Now, back to the game". He also combined book structure with personal narrative when he wrote the book of "My Most Painful Experiences." During this year the children began to write several drafts of stories. They began to recognize the process of making one's meaning clearer through the act of revision.

As well as experimenting with narrative form and structure, the children began to clarify and construct a stronger notion of expository text. They experimented with journalism, lists, reporting school events, writing assigned topic reports etc., and also with philosophical essays. In his essay on the importance of education Matthew combined narrative and expository styles to make his point:

> Education means alot to me! It gives me a chance to have fun with math, reading, ext. I can right storys with my friends. If I was not educated I could not do things like read and I would not know about anybody else. I love to be educated. Me and my friends can have lots and lots of fun. Story.
>
> I am in school. It is nine a.m. school has just started. It is my first day at school. I was not educated yet. I was scared. Quiet my teacher said. I was starteld. My skin allmost flew of my body, but I held it on. After a long time she said "reses" I din't know what in the world she was saying. Everybody else put there stuf ayway and walked outside. I stayed behine my best friend, Joey. Half a year later when Mrs. Rufrok said "reses" I was the first one outside. Then I asked Joey "What does reses mean?" Joey said "time to go to lunch." Two years later I new math. I was almost educated! I was happy. But now I <u>am</u> educated! I am happy. The end.
>
> Education is wonderful espeshaly when you ned it like in school are jest math class.
>
> Proof that I am educated, I rote this.

In this piece Matthew used everything he knew about writing to make his meaning clear. He mixed and combined narrative and expository elements inappropriately, but he demonstrated a strong personal voice and sense of what an expository essay is supposed to do: convince the reader of a point of view.

The fourth year was a coming together of many of the different constructions in genre with which the children experimented. Narratives

began to be well-formed, using planning and anticipation to enhance the meaning of the text. Expository prose was still in the beginning stages, with children continuing to experiment with lists, reporting etc., but some of the children began to construct a more advanced view of the purpose of expository text, thus differentiating between the purpose of narrative and exposition. This differentiation represents an advance in understanding different ways of making meaning through writing.

Year 5. The most striking characteristic of the fifth year is the progress the children have made in differentiating different writing genres. Narratives, descriptions, personal narratives, exposition all have definite characteristics that the children make use of. For example, the elements of narrative include main characters, setting, plot, problems and resolutions, often with a number of episodes all leading toward a final, more inclusive conclusion. Three of the children (Scott, Sally and Matthew) kept journals that were truly personal diaries, reporting daily events and their reactions to those events. All the children wrote reports during this year, which gave them a structure for expository writing. What is significant about these reports is that nowhere do any of them include a narrative in writing about factual topics. Until now, narrative and exposition were mixed to support each other. At this point, the expository writing seems to have been defined for itself, and not as a variation on the narrative. The reports are too long to quote in their entireties, but Matthew's introduction to his report on snakes gives a sense of his changing understanding of expository writing.

> Most people think they understand snakes very well. Snakes seem to be very simple animals. All they appear to have is a head and a long tail. But snakes are not as simple as they appear. There are

many amazing and surprising facts about snakes. This report will reveal some of them.

The snake is a member of the family of animals called reptiles which includes: Turtles, Crocodiles, Lizards and Tuataras. All reptiles are cold blooded. Cold blooded means their blood tempature changes to the air tempature. All reptiles have scales. A snake is different from other reptiles because it has no eyelids, ears or lims. It can tell if an enemy is coming because it can rest it head on the ground and feel the vibrations.

This report will be about the different kinds of rattle snakes, some facts about king snakes and facts on the cobras.

Matthew's introduction draws the reader into the report, summarizes some basic facts about snakes, and ends by explaining just what he will do in the rest of the report. When we compare this piece to his essay on what education means to me from the previous year it is clear that his understanding of the purpose of expository text has been both refined and changed.

During this year, the children often wrote in response to assigned writing exercises, such as making descriptions, taking a different point of view, continuing a story started by the teacher, etc. These assignments seemed to heighten their awareness of genre differences and uses. Sally turned a description into "The Life of a Lemon" complete with narrative and exposition of the development of a lemon, a very sophisticated piece of writing. Scott experimented with play writing in fulfilling another descriptive, point of view assignment; he also experimented with the shock value of bathroom humor and bad language on his audience. Development during this fifth year seemed to be focused on differentiating and refining the concept and use of different writing genres.

Part-Whole Coordination

Before I conclude, I want to share with you the third point in which developmental theory can teach us how to interpret and understand writing development. One aspect of cognitive development that is reflected in many domains of knowledge is part-whole coordination, an aspect of the development of classification and seriation, where children construct hierarchical relations between classes. Issues of part-whole coordination arise in mathematics in many strands (Black & Kroll, 1989; Piaget, 1965), in the development of scientific thinking (Inhelder and Piaget, 1958), and also in the development of literacy (Ferreiro & Teberosky, 1982). Ferreiro discusses the relationship between the development of part-whole coordination and the development of sound-symbol correspondences, where children have to understand that (in English) one symbol can stand for many different sounds and also that one sound can be represented by more than one symbol. In the semantic strand the influence of the development of part-whole coordination is evident in how children coordinate the different parts of a text, how they are able to add and delete information as they write, and how they account for their audience as they take a more objective stance in their writing. Let me briefly show how this is so.

To begin with the part is the whole. In the first year, where writing is mostly drawing and very brief, the picture or concept was the whole and the writing labeled that whole. There was no sequence, and no parts of the picture were discussed or represented separately. By the second year, a sequence of events appeared in some narratives, indicating the beginning of the construction of *parts*. In fact, the appearance of sequence marks one beginning of a sense of narrative form. Other parts of narrative form began to be used, such as the advent of markers like *once upon a time* and *happily ever after* or *the end*. The parts began to be distinguished, but were related

sequentially rather than hierarchically. The *bed to bed* structure and the *James Bond* structure represented a sequential stringing together of events or episodes.

By the third year, as the *James Bond* type organization became transitional to a more anticipatory form of story structure, (i.e. the episodes became more related to each other), a sense of the relationship between the parts and the whole became more apparent. However, the children were unable to insert revisions or changes, and tended to tack them on to the end of a piece, indicating a lack of a simultaneous sense of the whole and its parts. During the fourth year, children inserted information as they thought of it, with phrases such as "I forgot to tell you" indicating a sense of necessity about revision, but an inability to insert new material into an already formed piece.

The mixing of narrative and expository form in the fourth year, while in some ways seeming to show a less definitive attitude toward the separation of parts, in fact represented an attempt to differentiate the whole from its parts. In other words, the sense of a theme or message became one purpose of the text and that message had to be coordinated with the parts of the text, which could be relayed by expository or narrative forms, or both. Story structure was anticipatory in nature, using different literary styles to support this coordination of parts. Expository form, which is not sequentially organized in the first place, and is, hence, more difficult to construct, was still at a more rudimentary stage. With narrative the child began with the parts and constructed the whole from the parts. This is less true for expository text, where analysis of text must begin with the whole and then be reduced to the parts and their relation to the whole in order to be understood. It is not surprising, therefore, that the coordination of parts and whole occurred later in exposition than in narration.

By the fifth year the children had more clearly differentiated different genres of writing. This categorization of genres was represented by a better coordination of the parts and the whole. For example, the children wrote research reports which included introductions, chapters which represented the information in the report, and conclusions. Now the parts of the text had undoubtedly been taught and described by their teachers. What is interesting, however, is not that they included labeled parts in their reports, but that what was in those sections actually coincided with the title; the introduction was truly an introduction etc. In this fifth year, then, they had developed not only a strong concept of narrative, but the concept of exposition, at least for simple research reports, was seen as different than narrative, with different parts.

This is just a brief example of how logical thinking processes can and do apply to the learning of specific school subjects.

Conclusion

I have not discussed the development of the physical, symbolic, or social strands of writing, although that information can also be derived from this body of data. I have discussed the children's development in one issue of semantic development year by year, in order to make clear the progression of development that occurred. I want to summarize briefly the levels of development within the issue of the differentiation of literary genres and the levels of part-whole coordination that occur. (See Table 1)

The Differentiation of Literary Genres:

There are three basic levels in this category with sublevels at each level indicating development within each level:

(1) a. Genres are undifferentiated. Writing is a label.

b. Personal narratives or descriptions appear.

(2) a. Personal narratives with sequence are written. *Bed-to-bed* constructions are used to create stories. Many genres of expository writing are attempted.

b. Narratives are better differentiated; parts of narratives are used effectively. The structure of stories is linear or sequential. *James Bond* structure is used to create more complex stories. Different kinds of stories such as fairy tales, scary stories, stories about friends etc. are written. Personal writing takes on an epistemic function. Categories of expository writing begin to be differentiated, including using writing to convince the reader of a philosophical point of view.

(3) a. We formed narratives, true problems and strong structure as represented by the use of chapters to divide the text appear. Stories show some planning and anticipatory organization. Children are experimenting with different poetic and expository genres, combining and differentiating different styles and types. New content sources are used.

(3) b. Some expository styles are well-formed. Simple research reports which include introductions, subject chapters, and brief conclusions that essentially restate the conclusion are written. Children continue to experiment with other expository genres. Narratives are anticipatory in form, showing the use of text-level planning. Stories include several episodes before a resolution is reached.

In this category, Cathy is at level 2b, Scott is at level 3a and Matthew and Sally are at level 3b. Level 3b seems to represent a concrete level of differentiating literary genres. While the forms these children use are not as complex or flexible as the conventional adult models of these genres, nevertheless they have achieved some clear definition by this point. It is evident that development from one level to the next is a reconstruction

process of genre, approximating adult literature more and more at each level. In the process, children create some of their own genre types, some of which they find effective and continue to use and some of which they abandon as failures in their search for making sense in writing.

Part-Whole Coordination

The integration and differentiation of parts of a text from the whole text is an ongoing process that reflects generic logical development in this area. At the first level, the parts and whole are basically undifferentiated, although towards the end of this level some transitional differentiation of parts is evident through the use of numerous illustrations for example. At the second level the appearance of sequence recalls the development of seriation. The children are able to write a sequence of events or ideas in logical order. However, if they forget something they add it on to the text, wherever they happen to be, ignoring its appropriate place in the sequence. In seriation development the same difficulties with insertion appear (Inhelder and Piaget, 1964). By the end of the second level the children show that they recognize that the added information should have gone earlier by writing "I forgot to tell you" before entering the new information. At the third level, children are able to revise and insert new information. At the beginning of this stage they indicate a struggle to differentiate the parts from the whole while simultaneously considering the whole. By the end of this level they have identified rudimentary parts of both narrative and expository texts and are able to coordinate those parts, although usually in a sequential rather than coordinated way.

In this paper I have tried to show you the role developmental theory can play in helping us to understand the learning of writing. The children in this study came to school with different levels of understanding writing vis a

vis adult conventional wisdom. They developed in similar ways, along a similar path, despite different methods of teaching. One significant aspect of their education in writing, I believe, is that, even in the most structured writing environments, the children were encouraged to experiment with their own way of completing assignments. (One final example. Sally wrote at the end of one assignment, "Sorry, M___ [her teacher], I didn't exactly do the assignment.", indicating her own awareness of the difference between her teacher's expectations and her own performance, but confident that it would be acceptable, which in fact it was.) This freedom to experiment gave all of them the chance to construct for themselves different literary genres and figure out how to make their own meaning clear to their readers. In such circumstances, it is more likely that we can find children struggling with issues that produce a disequilibrium that leads to progress in understanding, rather than a disequilibrium that leads to children searching for immediate right answers. These children are trying, as Ferreiro would say, to understand not just the pieces, but the whole nature of the system.

Using the method of critical exploration to research writing development gives teachers and researchers the opportunity to see what children do know about writing, what hypotheses they are making about what is good writing, and how to use it. If educators can start with what and how children know, they have a better chance of designing developmentally appropriate instruction.

It is important to note that the developmental levels I have proposed do not correlate exactly with the years the children have been in school. Developmental pace is individual; children do not all develop at the same speed. Cathy's development during this period has been behind that of the other children in some ways, while Sally seems in some ways to be more

advanced. All children, given the opportunity, will learn to become good writers. The value of seeing the dissonance between levels and years of experience is that one can identify appropriate activities that will challenge a child to continue in his/her writing development if one understands at what level s/he is confronting a particular issue. Instruction can be designed that is developmentally appropriate for each child.

Learning to make meaning in writing is a developmental issue that children begin to construct as soon as they begin to write. The principles and methods of developmental psychology can be used to help us understand that development. In this study, issues that children face in striving to construct meaning in their writing can be seen to develop in a consistent way that can be identified within individual children's writing and across their individual experiences. Looking closely at children's writing over a period of years gives us insight into the development of writing. Such a fine-grained examination, coupled with knowledge of writing development, can inform elementary teachers of what issues children are currently constructing and reconstructing, thus informing instruction in a developmentally appropriate way. Individual differences can be understood within the whole continuum of writing development, allowing for more effective instruction for individual children.

Table 1

Levels of Development in the Semantic Strand

Level	Differentiation of Literary Genres	Part-Whole Coordination
1a	Genres undifferentiated. Writing is a label	Parts and whole undifferentiated
1b	Personal narrative or personal descriptions	
2a	Personal narrative with sequence. *Bed to bed.* Different expository genres tried.	Parts used to produce sequence. New information added only at the end.
2b	Narrative parts are linear. *James Bond* structure, fairytales, etc. Exposition=convince reader of point of view.	Add new information as they think of it, but recognize it should go elsewhere.
3a	Narratives with anticipation. Chapters, poetry, new content sources.	Revise; insert new information.
3b	Well-formed expository styles. Narrative show use of text-level planning.	Coordinate parts of narrative and expository texts sequentially.

Figure 1

Strands of Development in Writing

Physical: Representation of text on the page. Letter orientation; organization of space, small motor coordination, use of capitals and lower case letters.

Symbolic: Writing represents the sound rather than the meaning of language. Invented spelling, invented punctuation.

Semantic: Understanding and constructing the meaning of text in writing. Relationship between what is written down and what the writer mean; physical and symbolic structures the child constructs to make his/her meaning clear; the use of literary models and genres, the different functions of writing and written text.

Social: Construction of the communicative aspects of written language. The development of the notion of audience; the context in which writing occurs.

FIGURE 2

Z

JUN 4 1986

THSZMtMAtTHHLZ

This is night time at the hills.

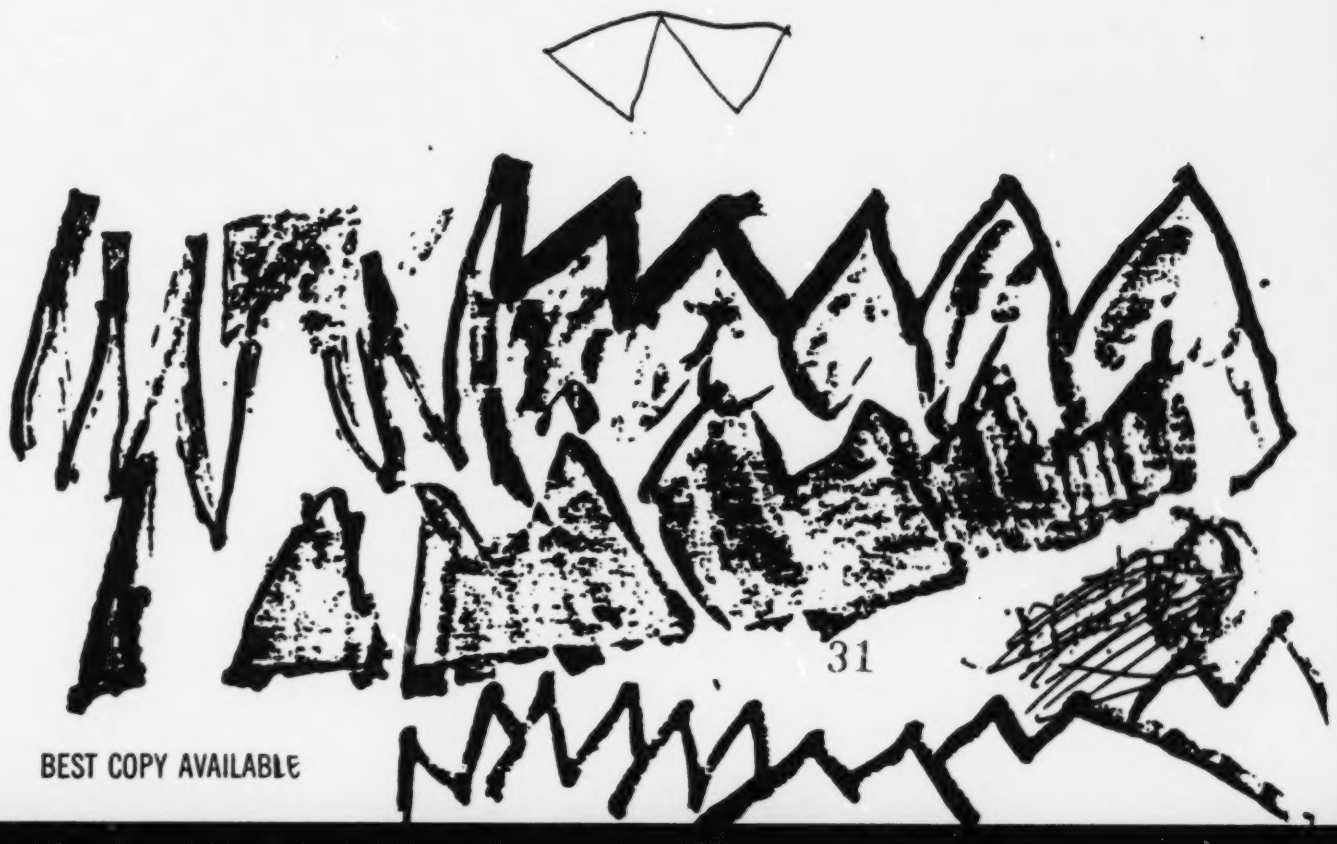

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FIGURE 3

MAY 1 4 1986

G.I. TO IS FITeN COBRA

G.I. Joe is fighting cobra.

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HE *2TOPPT *T LNCh

He stopped for lunch.

33

JANAY/24/14 8 6

THE RABE+

IS PREDE

The rabbit is pretty.

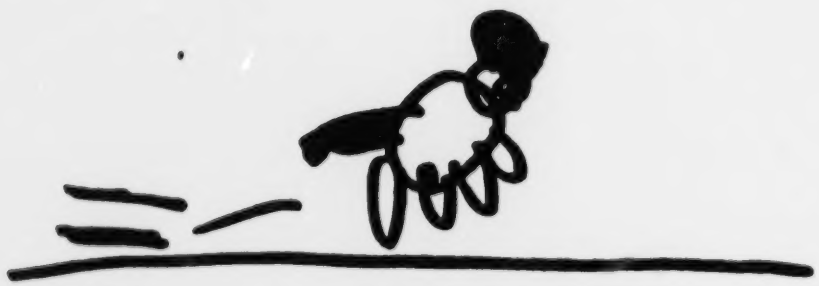

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FIGURE 4

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10 - (6)

I Ouhn Chasdock
tem STING Rays
SENK forro.

Did the Stingrays play this weekend?

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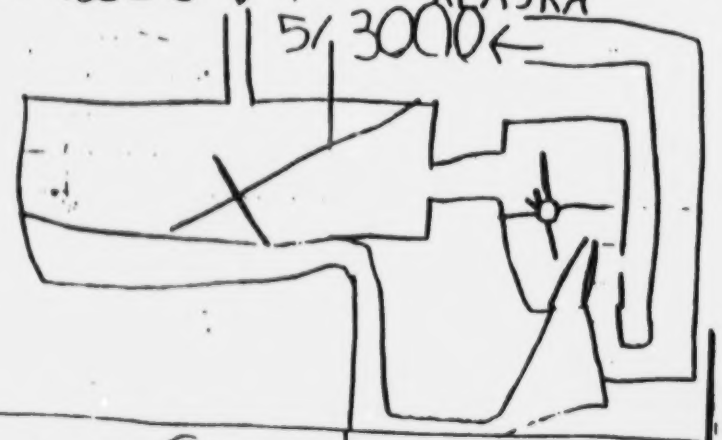
5-27 FIGURE 6 7/7

Maze ↓ ALASKA

5/30/00 ←



My family is

going to ALASKA

first a :air lin

Then a ship →

Then a train

Then on a air line

Then Home.

FIG. 9

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6-9 FIGURE 7 p.1

the day before
yesterday I went
to L.A and went
to my Grandas.
and yesterday
I went swiming
at my ancels and
went to disny land
and went to the

6-9

airport and ord
diner but then
we herd the
horn of the
airplane we
wer going
to be on exce
we had tikets
for the other
airplane so we ho
to yous the

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FIG. 7 " p. 22

6-9

tikets for the
other airplane
then thar was
a delae so we
cold of eten
diner then thar
was another
delae then we
had a snak
on the airplane
then we took off

6-9

and wen we go
home the airpl
we had tikets
for was stil at
the other airport
because it had
a long delae.
my brother
was king of disny
and gave me his

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FIG. 7 p-3

6-9

Wen We got home
he told me we cold
shar the royd cut
gafeld

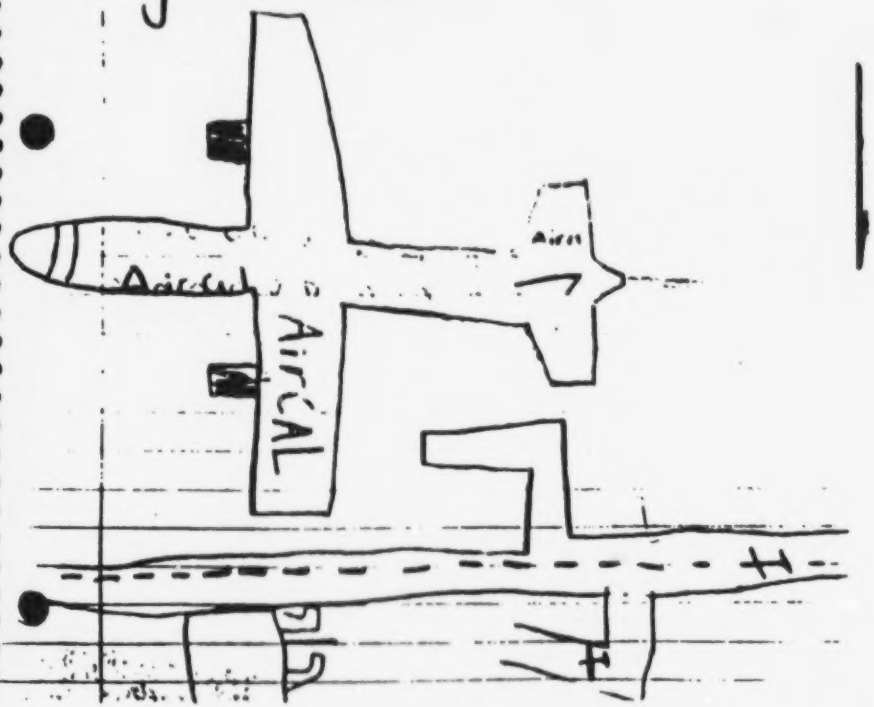

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FIGURE 8

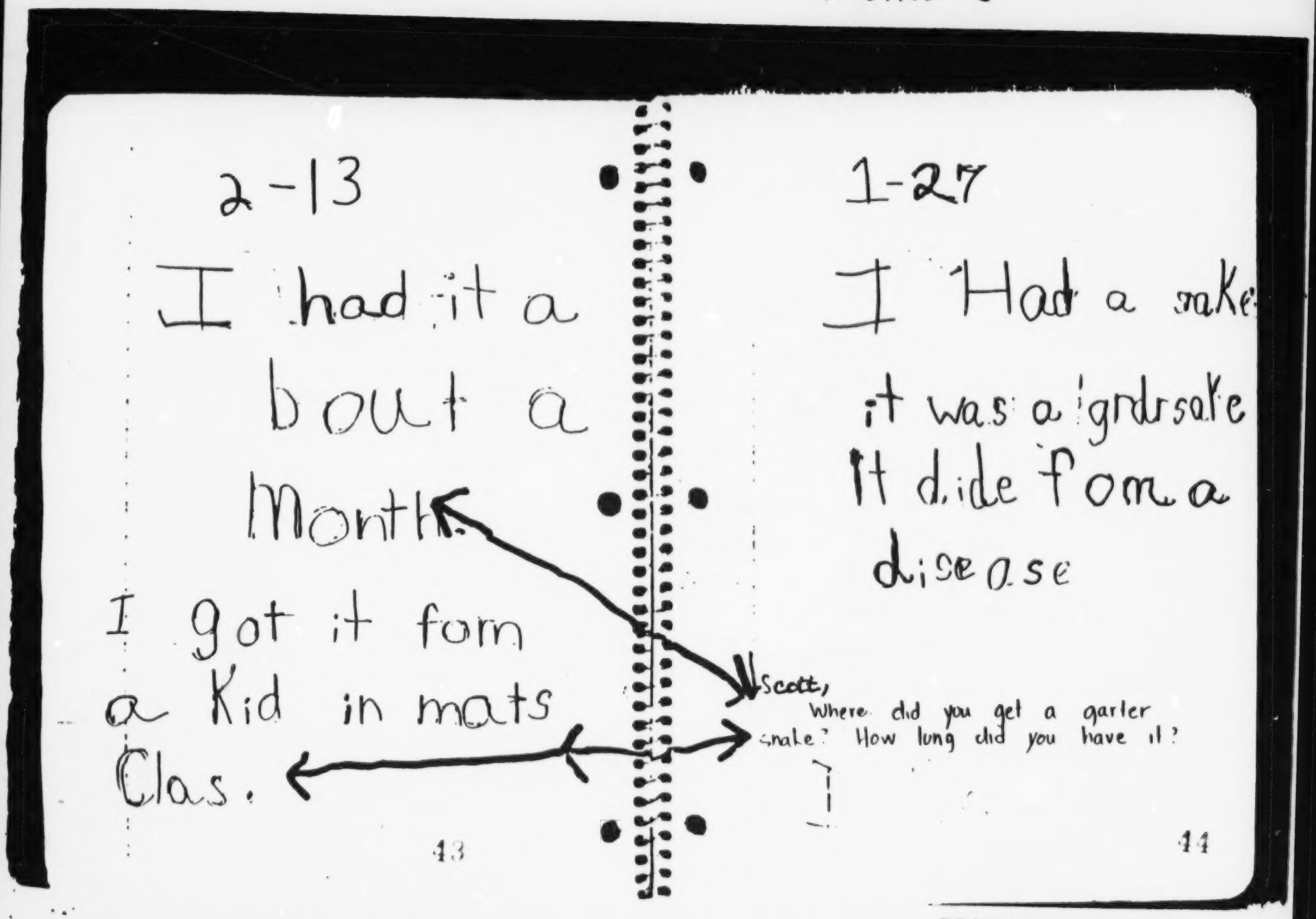
2-13
I had it a bout a Month.
I got it form a Kid in mats Clas.
13
1-27
I Had a snake
it was a grdrsake
It dide from a disease
Scott,
Where did you get a garter snake? How long did you have it?
11

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FIGURE 9

11-12

Hannah's favrite food is Macrony and chees.
Hannah's favrite cooky is Ceremie.
Hannah's favrite thinge is
Place is Under the
11/9 Stersa hannahs favorite
toy is Mister gtadoe
hed. hannah's
faverite is holday is
Cerismis hannahs
faverite ferot is Wotek
mellin hannahs faverite
Canb is choclit.
11-21 Hannah's faverit
game is sord.
hannahs best
friend is sarah.
Hannah's favorite thing
in schol is gerlls.
This is a fun list to read.
I am waiting to read more
about Hannah's favorite things.

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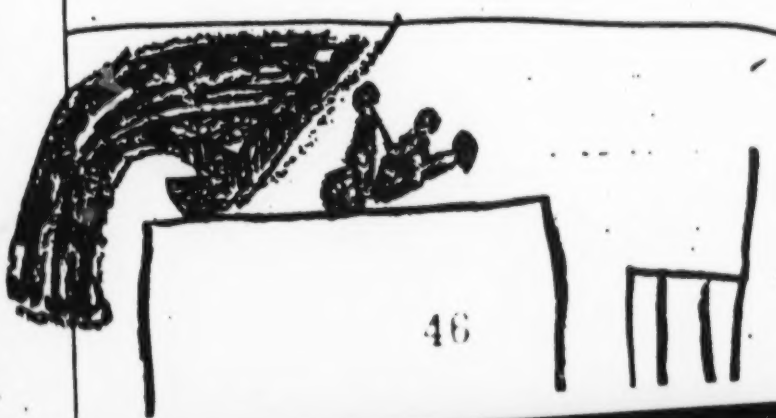
#16

1

Oct 19, 1987

One day there was a very clomsy kiong named King clomsy the fourtha And at the berekfest tabele the cloes andid up in his food.



2

Oct 22, 1987

And he had a buoted daughter duter. "I think I well go On a theobll" he said. Wich menes I think I will go onatrip. But he had not gon far won he said, "I will rest."

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FIGURE 10 p. 2

3 Oct 27, 1987

And he lade his hed down agenst a treeee and went to sleep and wen he wock-up he was in ~~a natter~~ another land. The trees all about him were coverd with candy and he was siting nexst to a bush of ice-creem cones. and the geras was cobit.

4 Oct 29, 1987

And ~~then~~ he sow a sillver calsal and the kings datigher and the king siad "I most fined-out were I am and how I will get back? But he had not gon far wen he came apon an old man. And the king siad: how do I get to thet casal.

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Nov. 3, 1987

5 And the old man gave him a very sterang map and he siad folloe the aros on the map and then the old man siad and when you foloe the aroes hop on one foot and stop at the X

Nov. 3, 1987

6 and he folode the aros and to his serpeise he fond the arose were marked on the geround and he frgot to hop on one foot so he throo asied the map and skiped of

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FIGURE 10 p. 4

November 10, 1987

But he fond that he ~~was~~ standing next to a pig and ~~the~~ pig had a sister named Christina and the pig was named Sarah.

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12/14/87

And then he rembered that he frgot to hop on onw foot.

So he had gon to the land of the pigs and then he stad how do I go back home and thex gave him anotier map.

FIGURE 10 p.5

FIGURES

(9)

January 4, 1988
and tolled him
this pome.
I'm the dragin
of grigly grom and
when a brave
nite comes along
to fite I toste
him gest like a
bun but ther
is one problim
you see I like my nites
medevar and
they awys come out wellin
dun

(10)

January 5, 1988
And so he folled
the map and
he killed the
dragen and roskued
the princess and
got and lived Happly ever after
back home.

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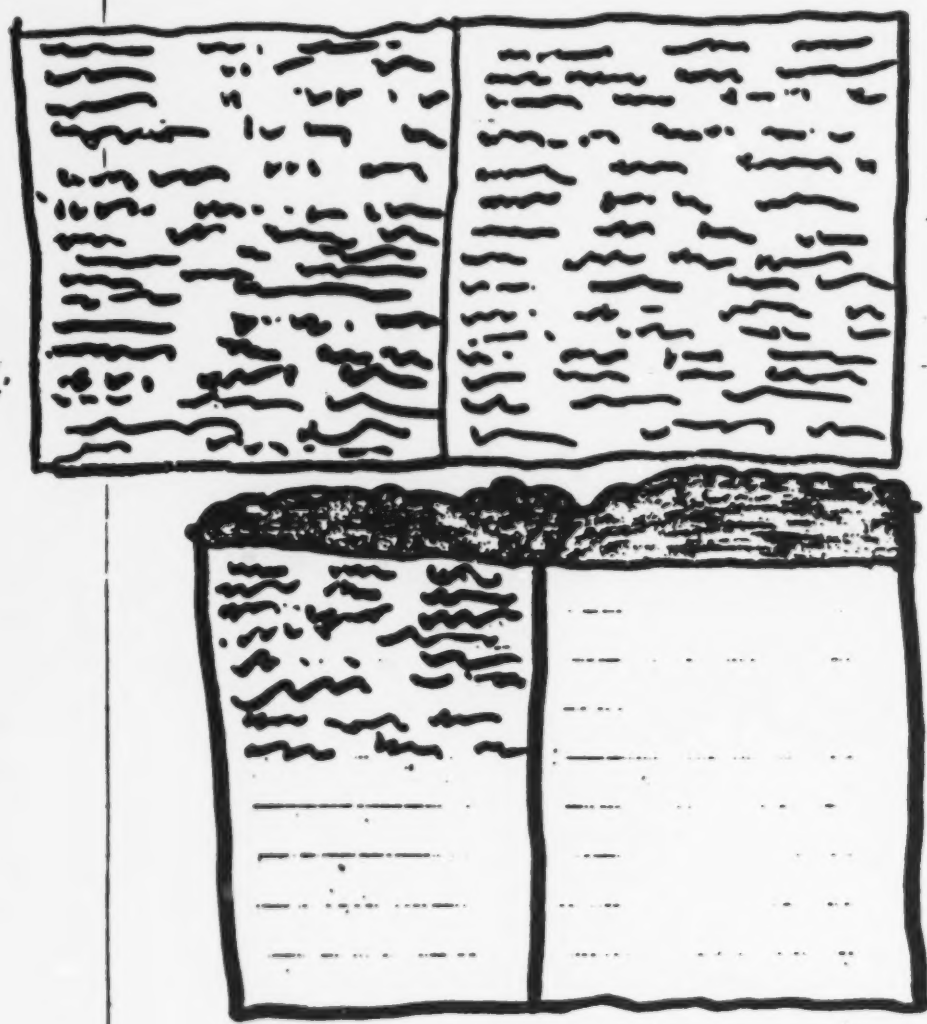
FIGURE 11

12-3-87

I WiSH I WAS HiSTOREE and my muthr WAS HiSTOREE.



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